Algebra is a text in one course and in another, in differential geometry, the texts are the last part of volume 1 of Goursat's *Mathematical Analysis*, Gauss's memoirs on *Curved Surfaces* and selected chapters from Humbert's *Cours d'Analyse.*

Another advantage in connection with our preparation of teachers is the meetings of the Mathematical Club. The club is a recent organization which aims to create an atmosphere in which to establish friendly intercourse among students and teachers, and to supply an opportunity for the presentation, by advanced students and professors, of papers of general interest.

Practically all students recommended as teachers of mathematics to secondary schools have had two or more courses in education besides work in science. Many students return for graduate work leading to the degree of Master of Arts. Their work is mainly in the department of education and in the schools of Providence and the surrounding cities. Under suitable restrictions tuition fees are met through scholarships awarded by the Board of Education of the state of Rhode Island. Such students (men and women) are not only well equipped scholastically, but have also acquired valuable insight and experience with reference to methods of imparting knowledge.

NOTES AND NEWS.

SEND ALL COMMUNICATIONS TO D. A. ROTHROCK, Indiana University.

The distinguished mathematical physicist, Professor DON JOSÉ ECHEGARAY, of the University of Madrid, died on Sept. 15, aged eighty-three years.

Mr. F. S. NOWLAN, of Columbia University, has been appointed instructor in mathematics at the Carnegie School of Technology, Pittsburgh.

At Pennsylvania State College, Dr. J. E. ROWE has been promoted from assistant professor to associate professor of mathematics.

Mr. E. J. OGLESBY, instructor in mathematics in the University of Virginia, has been appointed professor of mathematics at the College of William and Mary.

Mr. ALBERT H. HOLMES, a contributor to the MONTHLY in the department of Problems and Solutions, and a charter member of the Association, died at Brunswick, Maine, Sept. 10, 1916, at the age of sixty-five years.

Dr. J. A. BULLARD, Mr. C. E. NORWOOD, and Mr. J. J. TANZOLA have been appointed instructors in mathematics at the U. S. Naval Academy, Annapolis, Maryland.

At Dartmouth College, Dr. R. D. BEETLE and Dr. F. M. MORGAN have been made assistant professors of mathematics, and Dr. C. H. FORSYTH, of the University of Michigan, has been appointed instructor in mathematics.

Dr. H. M. SHEFFER, of the College of the City of New York, has been appointed lecturer on philosophy at Harvard University, offering the courses in logic formerly given by the late Professor Royce.

Mr. J. W. LASLEY, JR., returns to the faculty of the University of North Carolina after a year's leave of absence as fellow by courtesy in mathematics at Johns Hopkins University.

The Mathematical Club of the University of North Carolina was organized on October 19th. The officers are: WILLIAM CAIN, president, ARCHIBALD HENDERSON, vice-president, and J. W. LASLEY, Jr., secretary-treasurer. The club proposes to engage in mathematical investigation, especially along historical and pedagogical lines.

Miss EDITH M. COON, who for the past two years has held a position as instructor in the department of mathematics at Mount Holyoke College, has gone to Madras, India, as vice-principal of the Christian College for Women that has been recently founded there under English and American auspices. Miss Coon will teach mathematics and physics.

The October number of *The Monist* is devoted to a commemoration of the scientific and philosophical work of GOTTFRIED WILHELM LEIBNITZ and its influence on modern thought. This material in celebration of the Leibnitz bicentenary has been collected and edited by Mr. P. E. B. JOURDAIN, the Cambridge scholar, who is especially interested in the fields of mathematics, physics, and logic.

A review of the Napier Tercentenary Memorial Volume by Professor L. C. Karpinski was published in *Science* for September 22, 1916. This volume contains thirty papers, touching a variety of interests related to logarithms, by representatives of the British Empire, France, Germany, Italy, Denmark, Turkey, and the United States. The papers by representatives of this country have already been noted in these columns in earlier issues.

At Sheffield Scientific School, Yale University, the following changes have been announced: Dr. H. F. MacNEISH, instructor in mathematics, has resigned to accept an appointment in the De Witt Clinton High School, New York City; Dr. D. D. LEIB has gone to the Connecticut College for Women, New London; Dr. P. R. RIDER has become instructor in mathematics in Washington University, St. Louis, Missouri; and Dr. D. F. BARROW, of the University of Texas, and Mr. J. K. WHITTEMORE have been appointed instructors in mathematics.

During the past year, the Mathematical Club of Rutgers College held regular monthly meetings at which the following papers were presented: "Tangencies of circles," Dr. J. A. Ingham; "The occurrence of conic sections in the

orbits of the heavenly bodies," Professor W. B. Stone; "Life insurance; the life tables," Professor E. Brasefield; "The use of the auxiliary angle," Professor Richard Morris; "Summation of certain trigonometric series," Mr. C. P. Osborne; "Logarithms; exposition of Napier's principles," Mr. Ed. S. Ingham; "Ptolemy's theorem and its relation to trigonometry," Mr. Edwin Florance; "The triangle and its circles," Mr. L. B. Gittleman.

It is with regret that we record the death of Dr. L. L. CONANT, professor of mathematics in the Worcester Polytechnic Institute, Worcester, Massachusetts. He was killed by an auto truck in front of his home on Oct. 11, 1916. Professor Conant was a graduate of Dartmouth College, class of 1879, A.M., 1887, and Ph.D. of Syracuse University, 1893. He engaged in public school work from 1879 to 1887, at which time he became professor of mathematics at the Dakota School of Mines, remaining in this position for three years. After one year's study at Clark University, he accepted the professorship of mathematics at Worcester in 1891, in which position he continued until his death. He was interested in all phases of education, serving not only in his official capacity at Worcester, but as a member of the Massachusetts State Board of Education from 1909–1914. Professor Conant was a member of the American Mathematical Society, the London Mathematical Society, the Mathematical Association of America, and other scientific societies. He was the author of "The Number Concept," "Exercises in Plane Geometry," and "Plane and Spherical Trigonometry with Tables." Professor Conant made a provisional bequest of $10,000 to the American Mathematical Society, the income to be offered once in five years as a prize for original work in pure mathematics.

The sixty-third annual meeting of the Indiana State Teachers' Association was held at Indianapolis on Oct. 26–28, attended by more than 10,000 teachers of the state representing all grades of school work from the kindergarten to the college. The general meetings were held in five sections, and the sectional meetings relating to special subjects and interests met in thirty different sections. The mathematics section composed of high school and college teachers of mathematics met during the forenoon of Oct. 26 in Cleb Mills Hall. Some three hundred teachers of mathematics were present. The following program was presented: "The hurdle system of teaching algebra," by Mr. M. A. DALMAN, of manual training high school, Indianapolis; "Efficiency tests in mathematics," by Professor D. A. ROTHROCK, of Indiana University; "Some school-room problems," by President R. J. ALEY, of the University of Maine; and a round table "Discussion of recent tendencies in opposition to mathematics in the secondary schools," participated in by Professor F. H. HODGE, of Franklin College, Professor E. N. JOHNSON, of Butler College, Professor R. B. STONE, of Purdue University, and by others. In this discussion Professor HODGE reviewed the criticisms of the high-school course in mathematics by Commissioner David Snedden, of Massachusetts, and Dr. ABRAHAM FLEXNER, of New York; Professor JOHNSON presented the sentiment of a representative group of "Who's

Who" men and women, showing some 90 per cent. of those expressing themselves as being strongly in favor of retaining mathematics in the curriculum of the high school.

The Mathematics Section of the Indiana State Teachers' Association dates back to 1891 at which time the College Association of Mathematics Teachers, which had been formed a few years earlier, took on the broader field of secondary as well as college mathematics. The programs are arranged so as to include topics of interest to mathematics teachers of any grade. At the close of the sectional meeting a call was made for teachers of college grade to meet and make preliminary organization with reference to forming an Indiana branch of the Mathematical Association of America. The preliminary organization was effected by the election of Professor S. C. DAVISSON, of Indiana University, chairman, Professor W. O. MENDENHALL, of Earlham College, secretary-treasurer, and Professor F. H. HODGE, of Franklin College, as member of the executive committee. This is the fifth section of the Association to be organized. The others are Kansas, Ohio, Missouri, and Iowa.

The *Scientific American Supplement* for August 5, 1916, contains an article by Professor R. E. MORITZ, of the University of Washington, describing the "Clyco-Harmonograph," an instrument for drawing in ink or pencil some sixty-three distinct species of mathematical curves, among them such known curves as the conchoids, the nephroids, the foliates, and harmonic curves. The method commonly employed in the construction of such curves is to plot the curve by points determined by their equations. This process is laborious, and accumulates inaccuracies. The Moritz instrument eliminates these errors, and constructs the curves with the greatest ease and precision. The article in the "Scientific American Supplement" shows a photograph of the instrument and reproductions of a number of harmonic curves constructed by it.

Recent papers read before the ASSOCIATION and the SOCIETY indicate that renewed interest is apparent in all phases of mathematical history. Hence, no apology is needed for the publication of notes such as the following:

In *Nature*, December 3, 1914, p. 363, Professor CAJORI showed that the cross × as a symbol of multiplication, which is said in histories to occur first in William Oughtred's *Clavis mathematicae* (1631), is given in form of the letter x and X in Edward Wright's translation of John Napier's *Mirifici logarithmorum canonis descriptio*, second edition, London, 1618, where we read, page 4: "The note of addition is (+), of subtracting (−), of multiplying (×)." This is taken from a part of the book headed "Appendix to the Logarithmes," the authorship of which is not given but is believed now most probably to be attributed to William Oughtred.

In 1902 Professor W. W. BEMAN pointed out (*L'Intermédiaire des mathématiciens*, T. 9, Paris, p. 229, question 2424) that the colon (:) occurs as the symbol for geometric ratio at the end of the tables in Oughtred's *Trigonometria* of 1657. Professor CAJORI has found that the colon was so used by the astronomer Vincent

Wing in 1651, 1655 and 1656 and by a Suffolk schoolmaster with the initials "R. B." in 1655. For further details see *Nature*, Dec. 31, 1914, p. 477.

The first designation of the sides of a triangle by the same letters, respectively, as the angles opposite, one group of letters being capitals *A, B, C*, and the other group small letters *a, b, c*, has been attributed to Leonhard Euler (*Histoire de l'académie de Berlin, année*, 1753, p. 231), but Professor CAJORI finds that it occurs in a pamphlet containing trigonometric formulas published by Richard Rawlinson of Queen's College, Oxford, sometime between 1655 and 1668. Additional information on this is given in *Nature*, Feb. 11, 1915, pp. 642 and 643.

Recent discussions on the teaching of mathematics to students of engineering recall some earlier references to this topic. For instance, in the December, 1914, number of the *Bulletin* of the American Mathematical Society Mr. GEORGE PAASWELL, C.E., calls attention to the great need of applying fuller mathematical analysis to the problems of the applied science professions, and speaks of the appalling gaps in analysis which the engineer must bridge with assumptions far from rigorous or satisfactory; he appeals to producing mathematicians to turn their attention to bettering this state of affairs.

In the April 1915 number of the *Bulletin* Professor C. N. HASKINS makes reply to two leading points of criticism: (1) While the curricula of the schools of applied science are not sufficiently intensive or extensive to enable their graduates to meet these outstanding problems with a great wealth of mathematical power, the required mathematical courses represent very nearly the maximum of what can be effectively assimilated and used by the average student in such schools. Mathematically able students might however *elect* broader and deeper courses of a suitable sort. (2) As to the criticism that an engineer despairs of being able to read modern mathematical treatises unless in lines already familiar to him, it must be recognized that this "has its exact counterpart in the mathematician's despair of keeping up with modern engineering thought and practice." In analogy with courses leading to the degree of Doctor of Public Health, Professor Haskins suggests the establishing in a few advanced institutions of graduate courses wherein competent men may devote themselves to research in the problems of engineering and may at the same time prepare themselves for effective work in the mathematical problems of engineering.

SECOND ANNUAL MEETING OF THE ASSOCIATION.

The second annual meeting of the MATHEMATICAL ASSOCIATION OF AMERICA will be held at Columbia University in New York City on Thursday, Friday and Saturday, December 28, 29, 30, 1916. The meeting will open with a joint session on Thursday afternoon of the Association with the American Mathematical Society, the American Astronomical Society, and Section A of the American Association for the Advancement of Science; at which time Professor

E. W. Brown, of Yale University, will deliver his retiring address as president of the American Mathematical Society, and Professor A. O. Leuschner will deliver his retiring address as vice-president of Section A of the American Association.

On Friday morning Professor Florian Cajori, of Colorado College, will give an address before the Association on the History of Fluxions; and Professor M. W. Haskell, of the University of California, will speak on University Courses in Mathematics intended for Teachers of Secondary Mathematics. The latter paper will be discussed by Professor J. W. Young of Dartmouth College and Professor Edward Kasner of Columbia University.

On Friday afternoon will be the meeting of Institutional Delegates devoted to a discussion of the subject of Mathematical Libraries for Colleges, including a report of the Library Committee by the Chairman, Professor W. B. Ford of the University of Michigan; and a paper by Dr. T. H. Gronwall of New York City on "A Nucleus for a Mathematical Library."

On Saturday morning Professor E. B. Wilson, of the Massachusetts Institute of Technology, will give an address on The Mathematics of Aerodynamics, and the subject will be discussed by Professor A. G. Webster of Clark University, and Professor E. W. Brown of Yale University.

On Thursday evening there will be a joint dinner of the Mathematical Association of America with the American Mathematical Society, and Section A of the American Association for the Advancement of Science.

On Friday between twelve and two o'clock there will be an exhibition of Portraits and Medals of Mathematicians from the collection of David Eugene Smith.

The annual business meeting, with election of officers and other important matters, will occur on Friday afternoon at half past three o'clock. All meetings of the ASSOCIATION will be held in room 301 of Hamilton Hall, Columbia University. The headquarters of both the Association and the Society will be at the Murray Hill Hotel. Members should make reservations at the earliest possible date.

The Program Committee, Professor David Eugene Smith, Chairman, stands as announced in the November issue. The Committee on Arrangements, Professor Thomas S. Fiske, Chairman, has been enlarged by the addition of Professor Joseph Bowden, of Adelphi College; Professor C. O. Gunther, of Stevens Institute, and Professor J. B. Chittenden, of the Brooklyn Polytechnic Institute.

The Committee on Libraries, whose preliminary report will be given at this meeting, was announced in the November MONTHLY, but through an oversight of the editors the names of two members were omitted. The full committee is as follows: Professor W. B. Ford of the University of Michigan, Chairman, Professor Florian Cajori of Colorado College, Professor E. S. Crawley of the University of Pennsylvania, Professor S. Lefschetz of the University of Kansas, Professor W. R. Longley of Yale University, and Professor R. E. Root of the United States Naval Academy.